

# STRENGTHENING OUR NATION'S Workforce

with  
Demand-Driven  
Solutions

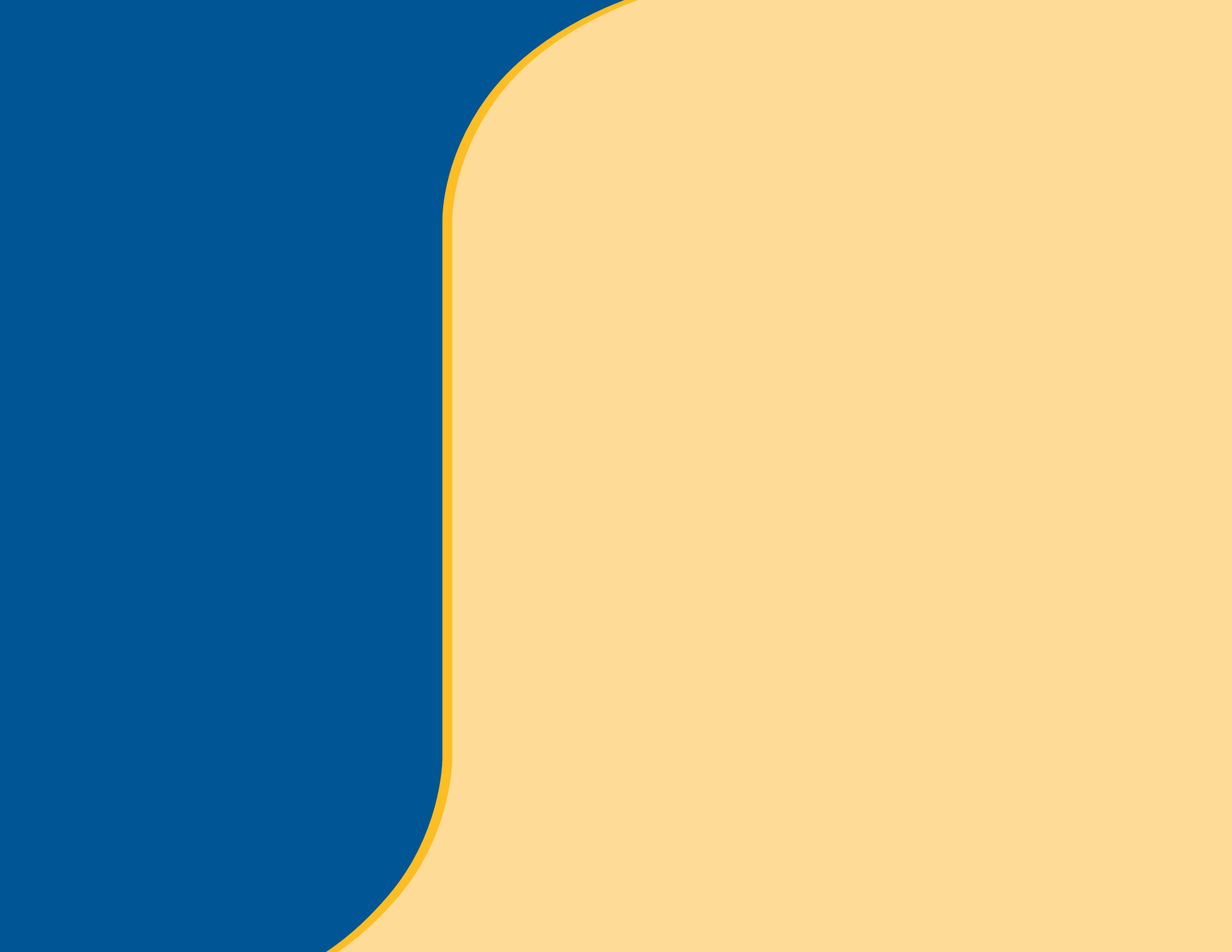


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A collage of five images showing various workers in industrial and technical settings. Top left: A man in a green shirt works on a large metal wheel. Top right: A man in a striped shirt works at a computer workstation. Middle left: A woman in a pink shirt smiles while holding a clipboard. Middle right: A man in a dark shirt works at a control panel with multiple monitors. Bottom right: A man in a blue shirt works at a control panel with a monitor. The images are overlaid with a semi-transparent yellow and orange gradient.

**Registered  
Apprenticeship  
Trends in  
SEVEN  
INDUSTRIES**



# INTRODUCTION

## A Skilled Workforce for Our Evolving Economy

**A**t the dawn of the 21st Century the United States confronts a fundamental change in its workforce needs.

In recent years, manufacturing has transformed to a lean and flexible industry requiring workers to update their skills. Meanwhile, new industries are emerging that require a new set of skills.

The computer and health-related industries, in particular, are experiencing the strain of having too few trained workers to meet their rapidly increasing, and changing, needs. Labor shortages are also expected in other industries where most jobs do not require a college education, but instead call for specific technical or trade skills.

These shifts in the workplace, propelled by rapidly changing technologies that demand a flexible training system to keep workers up-to-date, have meant that employers must find new and efficient ways to train their workers. Registered Apprenticeship, a flexible and efficient training model, holds great promise for employers who want to maintain a competitive edge in the emerging global economy.

### Registered Apprenticeship System

Employment projections in the United States present important opportunities for the Registered Apprenticeship System, not only in construction and manufacturing, which have used the apprenticeship training model for decades, but also in the newer high growth service-providing industries. The apprenticeship model, which combines on-the-job learning with related instruction and mentoring, lends itself to these high growth industries.

Since 2001, the U.S. Department of Labor's (DOL) Office of Apprenticeship (OA), in collaboration with the National Association of State and Territorial Apprenticeship Directors (NASTAD), has led efforts to expand Registered Apprenticeship into new areas.

The intent of this effort is to build the capacity of the nation's workforce and to respond to the needs of the increasingly competitive world economy.

As the graphic on page 2 shows, the Registered Apprenticeship model, which relies upon both technical and theoretical training while being employed, is an efficient way to train workers, perhaps more so than a training approach that depends solely upon instruction. In many cases, workers who participate in Registered Apprenticeship gain expertise in performing their jobs more efficiently and become productive at a faster rate.

### 2004 - 2014 JOB GROWTH PROJECTIONS

#### Job Growth/General

- Total Employment: 18.9 million \*
- Replacement Jobs: 35.0 million

#### Job Growth/By Sector

- All Sectors: 14.8%
- Service-Producing Sectors: 17.0%

#### Strongest Growth Areas in Service-Producing Sectors\*\*

- Education and Health Services
- Professional and Business Services

\* From 144.0 to 165.3 million jobs.

\*\* Projected to grow twice as fast as the overall economy, accounting for 75% of new jobs.

Source: Bureau of Labor Statistics, 2005

Registered Apprenticeship is a demand-driven training model that offers employers an important way to elevate the competencies of their workers and establish the standards of proficiency they need to compete. Registered Apprenticeship has several major components:

- **On-the-job Learning**

Apprentices benefit from real-world application of theory-based instruction as they work in their own job setting. The subject content and time requirements of an apprenticeship program depend on the occupation and the needs of the employer and are designed to ensure increased job competency over time.

- **Related Instruction**

Apprentices receive technical training in highly skilled occupations often provided at local community colleges and increasingly through distance learning. Related instruction, combined with

concurrent on-the-job learning, is a unique feature of the Registered Apprenticeship training model.

- **Mentoring**

Apprentices work and learn under the direction of qualified personnel, or mentors, who are experienced and proficient in their field. Mentors are not necessarily supervisors, but coaches who help apprentices learn skills they need to do their jobs successfully. Typically, apprentices achieve mentor-level status when they complete program requirements. They then are qualified to serve as mentors to apprentices.

- **Incremental Wage Increases**

Registered Apprenticeship aligns incremental wage increases of apprentices to their enhanced job proficiency. Proficiency, which is indicative of exhibited job competencies, results from on-the-job learning, mentoring and related instruction experienced by apprentices.



Source: U.S. NAVSEA - Naval Undersea Warfare Center - Division Keyport, NA

## Purpose of the Report

This report, **Strengthening Our Nation's Workforce with Industry-Driven Solutions**, was commissioned by OA in fall 2004, with the Biotechnology case added in 2007. OA tasked McNeil Research and Evaluation Associates (McNeil Research) and OA staff to look at the status of the development of Registered Apprenticeship in six high-growth industries and the military. Five industries (health care, high-tech manufacturing, information technology, geospatial technology and biotechnology), which had never used the apprenticeship training model, were given seed capital to develop programs. The other industry (maritime) and the military have operated apprenticeship programs for a number of years, but only recently adopted the Registered Apprenticeship model. Additionally, OA and NASTAD staff were trained to undertake outreach efforts in new industries. This report looks at results of those investments and marketing efforts by the Department of Labor and provides a snapshot in time of each project as it gets underway. Even though the projects are young, there are some promising trends that point to the value of Registered Apprenticeship in seven very diverse industries. The industries and sponsoring organizations include:

- **Health Care:** Council for Adult and Experiential Learning (CAEL)
- **Advanced Manufacturing:** National Institute for Metalworking Skills, Inc. (NIMS)
- **Information Technology:** The Computing Technology Industry Association Educational Foundation, Inc. (COMPTIA) and the National Information Technology Apprenticeship System (NITAS)
- **Maritime (Transportation):** Seafarers International Union and partner employers

- **Military:** Indiana National Guard
- **Geospatial Technology:** The University of Southern Mississippi
- **Biotechnology:** New Hampshire Community Technical College

## Approach

Data was gathered about the benefits and effectiveness of Registered Apprenticeship, as well as information about the process of program implementation.

The report is based on data gathered through document reviews; observations at selected industry sites; and informal interviews with project directors, site coordinators, mentors, apprentices, and representatives from employer sponsors, educational institutions, and the local workforce development system.



# Inroads into Industries : Status at a Glance

	Preliminary Observations	Role of Registered Apprenticeship
<b>Health Care</b>	Offers advancement along a nursing career lattice. Decreases recruitment costs; improves employee skills, confidence, and quality of patient care; increases diversity.	Creates a pipeline of skilled workers. To aid retention, employers are training incumbent workers to become CNAs or attain competencies in specialty areas. Many are advancing to LPNs and RNs.
<b>Advanced Manufacturing</b>	The competency-based RA system standardizes skills across the industry, makes hiring practices more consistent, increases employers' return on investment, and motivates employees to gain competency.	A competency-based RA system is being developed to improve the way skilled workers are trained, which allows flexibility to employers and apprentices.
<b>Information Technology</b>	RA is an effective training model that provides a tracking system for worker skills, ensures employer needs are met, increases productivity, and helps attract and retain high-quality workers at lower costs.	As the IT apprenticeship program becomes fully operational and institutionalized, it will be important to connect apprentices and sponsors enrolled through the program with DOL's RA system.
<b>Maritime</b>	Apprenticeship is a training model with a track record for producing a skilled workforce of unlicensed merchant marines. RA adds value to the model and helps improve retention, reduce recruitment costs, and produce well-trained and efficient employees.	National RA standards encompass the skills apprentices are expected to attain as well as policies in areas such as recruitment, supervision, and program administration. RA opportunities can be systematically publicized to a broad audience of prospective workers.
<b>Military Indiana National Guard</b>	RA facilitates turning military training into civilian credentials earned while completing a military obligation. It aids retention, reduces recruitment costs, and meets employer demands for dedicated and qualified workers.	RA offers great potential through the public workforce system to help re-train many deployed members of Indiana's National Guard for the civilian workforce.
<b>Geospatial Technology</b>	The geospatial technology RA program provides a model for training geospatial apprentices based on industry needs and employee performance gaps. RA also provides a standardized job specialty that is nationally recognized.	RA has been adopted to meet industry growth requirements and to offer alternatives to traditional recruitment and retention.
<b>Biotechnology</b>	RA is building a pipeline of workers from the surrounding communities where biotech firms are located. It is preparing a qualified technician at an earlier stage than 4-year college students because of the hands-on learning aspect of on-the-job training.	RA is developing high-skilled technicians at a faster rate than those who are trained by classroom instruction only.

## ACRONYMS USED

### IN MATRIX:

**RA:** Registered Apprenticeship;  
**CAEL:** The Council for Adult and Experiential Learning;  
**CompTIA:** The Computing Technology Industry Association  
 Educational Foundation; **NIMS:** National Institute for Metalworking Skills



Stage of Program Development	Next Steps
CAEL established the nursing career lattice program, using RA, in nine sites. Employers are continuing or expanding the program across their health care organizations.	RA is gaining acceptance in the health care industry. Local and national apprenticeship staff are recruiting health care partners to expand its use in the industry.
NIMS has developed curriculum guidelines for eight occupations and is working with 36 manufacturers on the competency-based model.	Expand the use of e the competency-based training system.
CompTIA has developed and is implementing the National Information Technology Apprenticeship System (NITAS) for IT professionals. OA and CompTIA are educating firms about this program.	Technical assistance will facilitate the process of connecting the IT apprenticeship program with DOL's RA system, as well as train staff at One-Stop centers in methods to channel potential IT workers into the IT apprenticeship program.
The Seafarers International Union signed the national standards of apprenticeship with DOL in May 2003 and added a cruise ship hospitality competency based certificate. They are recruiting seafarers and hospitality enrollees from the workforce system nationwide.	New coursework is added, as needed, to ensure that the RA program continues to meet the latest training requirements of the U.S. Coast Guard and the Standards of Training, Certification, and Watchkeeping.
The Indiana National Guard is implementing a three-stage RA strategy. Over 250 full-time Guard members have completed the program (68 more are enrolled). Plans exist to include part-time and high school Guard members.	The Guard and OA have created a RA program with great national potential. Guard and OA representatives believe the Indiana model can be replicated in other states (52,000 Guard and active duty members).
A Geospatial Specialist Certificate has been established to meet the needs of employers in the industry. A competency-based system has been created for both the employer and apprentice to monitor progress and measure the economic impact of the program.	The program will continue to build a prototype-training model for national replication to enable industries to integrate geospatial technology throughout their organizations and meet the need for skilled workers.
The program is established at New Hampshire Community Technical College. The program is being disseminated through a consortium of community colleges and employers.	Further market the apprenticeship program to employers and community colleges.

## Benefits to Employers

- Greater competence of employees
- Reduced turnover rates
- Greater employee retention
- Lower investment in recruitment
- Higher productivity
- Improved quality of patient care
- Improved quality of products/ services
- More diverse workforce

## Benefits to Apprentices/Employees

- Nationally recognized and portable certificates
- Improved skills and competencies
- Increased wages as a result of mastered competencies
- Ability to advance in career
- Higher self-esteem based on enhanced skills and certifications

# OVERVIEW OF THE PROJECTS

## Industries Explore the Registered Apprenticeship Model

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### Health Care:

#### Council for Adult and Experiential Learning (CAEL)



CAEL, a national nonprofit organization, created a nursing career lattice to increase the number of Certified Nursing Assistants (CNAs), Licensed Practical Nurses (LPNs), and Registered Nurses (RNs). It combined the Registered Apprenticeship training model for the CNA and LPN with online instruction and clinical training for the Associate Degree in Nursing (ADN).

Registered Apprenticeship was a new training model for the health care industry; therefore, CAEL, OA, and State Apprentice Council (SAC) staff worked together to educate potential partners about its structure and benefits prior to recruiting employers. CAEL implemented the nursing career lattice program in nine sites: Houston; Sioux Falls, South Dakota; Chicago; Northern Virginia, Michigan, Kentucky, Georgia, Washington State; and Maryland. Implementation efforts focused on building local partnerships with health care providers and associations, licensing agencies, educational institutions, and One-Stop career centers. Health care regulatory agencies, at both the state and national levels, were included in all phases of program development to address issues related to licensing requirements.

Among the partners involved in the development of the program were local OA and SAC staff, health care employers, community colleges, and the workforce development system. OA and SAC staff recruited employers, facilitated partnerships, and provided

technical support; employers provided the training to existing employees to increase retention and decrease recruiting costs; community colleges worked with employers and licensing agencies to design related instruction to meet state requirements, as well as the training needs and work schedules of apprentices; and One-Stop career centers and Workforce Investment Boards (WIBs) provided resources (e.g., funds for tuition reimbursement) and services to employers.

Registered Apprenticeship addresses the health care industry's workforce needs in several important ways. It helps with recruitment and retention. Job seekers who have a clear understanding of position requirements, and have an opportunity for advancement along a career lattice, are more likely to stay on the job once hired, as do incumbent employees when given the opportunity to advance in their careers. Registered Apprenticeship is seen as a cost-effective training method. By increasing retention, recruitment costs decrease. Employers prefer to train their own employees rather than recruit new hires. Employers also indicate that Registered Apprenticeship contributes to increased skill levels, confidence, and self-esteem in employees; this positively affects the quality of patient care. And, finally, the training model is helping to increase diversity in the health care workforce as employers seek to have the workforce approximate the composition of the patients they serve.



## **Advanced Manufacturing:** **National Institute for Metalworking Skills, Inc. (NIMS)**



NIMS, based in Fairfax, VA, is a nonprofit organization created by the major metalworking trade associations with the mission of developing a set of industry-driven national skill standards that set a benchmark for competency in the industry. NIMS is developing a competency-based Registered Apprenticeship training model to help establish unified skill standards throughout the industry.

Thus far, NIMS has developed curriculum guides for eight occupations and has 36 manufacturers using the competency-based system. The training system uses a career lattice that allows for lateral movement across occupations and skill sets, as well as for progression to higher levels of competency in the same occupation.

To implement the system, NIMS is working with OA and SAC staff, educational and training organizations in the pilot site locations, and with One-Stop career centers and WIBs across the country to identify new hires and gain assessments of the interests and abilities of potential employees. Educational and training organizations are providing instruction at flexible times and in convenient locations. They also are willing to grant college credit for Registered Apprenticeship related instruction.

Employers reported that the Registered Apprenticeship model helps with recruitment and retention because new hires are attracted by the opportunity for faster advancement, quicker wage increases, national credentials, and the option of earning college credit. Employers also point to how the approach motivates employees to work harder to achieve competency level skills. This contributes to improved delivery schedules and increased productivity. Registered Apprenticeship is viewed by many manufacturers as a cost-effective training method because it takes apprentices less time to reach a level of competency.

## **Information Technology:** **The Computing Technology Industry Association Educational Foundation, Inc. (CompTIA) and the National Information Technology Apprenticeship System (NITAS)**



CompTIA is a not-for-profit trade association based near Chicago that represents an international technology community of employers, workers, and trainers. CompTIA is building the National Information Technology Apprenticeship System (NITAS), a competency-based apprenticeship method that supports consistent and flexible credentialing of IT workers via an internet-based system that registers, tracks, and manages partici-

pants to ensure they attain skills and competencies. As part of the effort to institutionalize the IT apprenticeship, CompTIA has developed skill standards and work processes for several IT career tracks. NITAS is fully operational and accessible throughout the nation—to both small and large employers.

According to CompTIA staff, the apprenticeship system holds great promise for small businesses that employ only a few IT professionals because it better connects them with the public workforce system. Employers will be able to use NITAS as a tool to manage their IT workers, especially ensuring that the competencies and skill levels are current and reflect national standards and IT trends.

CompTIA is working closely with OA, educational institutions, and the workforce development system to implement the project. OA is assisting with the marketing of NITAS throughout the country. Several colleges are serving as pilot sites for NITAS, testing how their IT curricula fit into the NITAS career tracks. CompTIA is preparing a set of tools for One-Stop career centers to use in assessing job seekers to determine their suitability for IT work and to help direct them to employers.

Although NITAS is still in the early stages of development, CompTIA has laid the foundation for a national apprenticeship program for the IT industry that appears to meet the needs of employers and workers. IT managers see the apprenticeship model as superior to the classroom-only approach to training IT workers. NITAS will allow for easy verification of the skills level of IT workers by creating a permanent online resume of the apprentices' education, certification, and skills validation. Ultimately, NITAS is expected to help employers increase productivity by readily identifying employee training needs that may hinder performance.



### **Maritime (Transportation): Seafarers International Union and Partner Employers**

The Seafarers International Union (SIU) is the largest North American union representing merchant mariners. Almost all unlicensed mariners with U.S. companies are recruited and trained through the companies' contractual agreements with

SIU. Training is provided by the SIU Paul Hall Center for Maritime Training and Education in Piney Point, MD. Although SIU has operated an apprenticeship program since 1967, it was in May 2003 that the program came into the U.S. Registered Apprenticeship system. The comprehensive training program includes highly structured classroom instruction and hands-on training. Training covers the duties and responsibilities in the three shipboard departments—deck, engine, and steward—and lasts about 11 months, including time at sea.

SIU has added a cruise ship hospitality competency-based certificate for employees working on cruise ships. SIU is working in partnership with OA, employers, and the workforce development system to expand the apprenticeship program. Because of the nature of the maritime industry, the apprenticeship program is structured to recruit applicants from anywhere in the country and to provide employment on ships with SIU contracts that might sail from any U.S. port. As a result, program staff are developing relationships with state and

local workforce development organizations across the country. To date, half of the 1,700 hospitality certificate enrollees and one-third of the 600 maritime apprentices were recruited from One-Stops.

Preliminary observations point to advantages for establishing SIU's program in the Registered Apprenticeship system—most notably—help with recruitment. In particular, the use of OAs' Registered Apprenticeship web site will allow the program to reach a larger audience and generate a larger applicant pool. Program managers believe that the length of the training will yield graduates that are more committed to the program and likely to stay in their jobs. Employers point to the cost-effectiveness of the program. It improves retention in the industry, which reduces the cost of recruiting and training new workers. Employers are able to pay the union-negotiated, incremental apprenticeship wage while the men and women are in training. And, program graduates are well prepared to work safely, which reduces the likelihood of costly accidents. In addition, the combination of training on shore, in the classroom, and on board vessels produces well-trained and knowledgeable graduates.



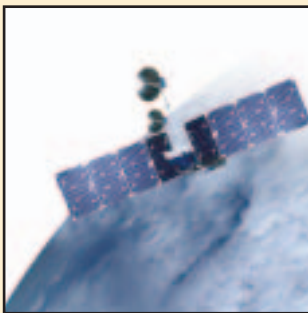
### **Military: Indiana National Guard**

The Indiana National Guard operates the Indiana Military Apprenticeship Program (INMAP), which provides apprenticeship training and certification to both Army and Air Force Guard members. INMAP allows Guard members to earn certification for skills they learn through documented work experience (on-the-job

learning) and related technical instruction. It offers participants an opportunity to turn military training into a civilian credential that can be earned while completing a military obligation—in many instances at little or no cost to service members or employers. Employers who sponsor apprentices incur no cost for related instruction. Instead, the cost is paid through the G.I. Bill and other tuition assistance programs that are available to Guard members.

The Indiana National Guard has worked closely with OA since 2001 to develop and expand INMAP. OA serves as the registration agency. The Guard has established articulation agreements with several colleges and universities, which enable apprentices to translate their time in training into college credits. As part of the effort to build and expand INMAP, the Guard has partnered with the Veterans Employment and Training Service, and the Indiana Department of Workforce Development, which includes the State's One-Stop delivery system. Thus, employers who are interested in sponsoring apprentices may contact either the training service or the One-Stop career centers.

Observations indicate that the Registered Apprenticeship training model and the military's training system are compatible. Guard supervisors and recruiters believe that Registered Apprenticeship will serve as an important recruitment tool for the Indiana Guard and will result in a lower turnover rate among Guard members. This will ease the costly task of recruiting and training large numbers of new Guard members. A major advantage of Registered Apprenticeship, Guard officials believe, is the opportunity to turn military training into a civilian credential and earn college credits in the process. They also believe that the program offers employers a source of workers with traits instilled by the military: high self-esteem, dedication, and pride in service.



### **Geospatial Technology: The University of Southern Mississippi**

The University of Southern Mississippi's Workplace Learning and Performance Center is pilot testing the nation's first Geospatial Technology Apprenticeship Program (GTAP). Prior to initiating GTAP, the university developed the Geospatial Technology Competency Model as part of a NASA effort to help meet the need

for a skilled workforce in the nascent field of geospatial technology. The GTAP pilot is designed to build capacity within community colleges to offer geospatial technology certificates and technology

programs using the Registered Apprenticeship infrastructure. It provides a structured training program that gives participants the opportunity to count apprenticeship course credits toward a two- or four-year degree. Apprentices who are not interested in pursuing a degree may be interested in the "geospatial specialist," a portable Registered Apprenticeship credential that demonstrates the skills they have acquired.

University staff are working with OA, community colleges, employers, and the workforce development system to implement the pilot. OA provides technical assistance and support to the effort. Three community colleges provide related instruction to GTAP apprentices using a curriculum consisting of 21 credit hours, five required courses, and two electives. Partnerships with NASA, Lockheed Martin, and regional economic development and technology organizations help ensure that the project is industry driven and guided by the industry's workforce needs.

Initial indications are that GTAP addresses the workforce needs of the geospatial industry in several key ways: recruitment, skills development, mentoring, and training. The current demand for skilled workers is mostly at the specialist level, which does not require advanced engineering degrees, but training at the post-secondary level. GTAP provides a model that allows for recruiting and training at the needed level. It also allows for developing skills based on a competency plan, resulting in trained workers with nationally recognized credentials.



## **Biotechnology:** **New Hampshire Community Technical College**

New Hampshire Community Technical College (NHCTC) teamed with Lonza Biologics Inc., an international company with a plant in Portsmouth, NH, to develop an apprenticeship program in biotechnology. The school currently has 60 students working on a certification or

towards a degree in biomanufacturing and many are taking the apprenticeship path. Apprenticeship offers students a partial scholarship and paid on-the-job learning with leading biotech manufacturers. Participating employers give entry-level technicians the opportunity to do the procedures and experiments that they need for the profession. Students come from a variety of educational backgrounds. Some students come directly from high school while others are adults making career changes.

According to Mike Ciccio, Production Manager, and Tara Meulenbroek, Human Resources Generalist, the apprenticeship model is appealing because it helps the company build a foundation for their growing workforce. "The community will get a better understanding of the industry," explained Ms. Meulenbroek. They hope to use the apprenticeship program to build a pipeline of workers from the surrounding area.

Registered apprenticeship fits naturally into a field like biomanufacturing with its emphasis on related instruction combined with hands-on laboratory work. Students work towards their Associate's degree in Biotechnology and work 2000 hours to complete an apprenticeship. They take classes their first two semesters at NHCTC in subjects such as biology, chemistry, writing technical documents, and computers. During the summer between freshman and sophomore years, students apprentice with a biomanufacturing firm. They earn an incremental wage based on the full salary of an entry-level bio-technician. During the second year, students continue their college courses

and may elect to work and study simultaneously or wait until their sophomore year is complete before completing their apprenticeship. The courses are difficult; so many students just focus on their studies. After the Associate's degree is complete, apprentices have the option to work full-time, or go on to obtain a Bachelor's degree in chemical engineering or bioengineering or a combination of full-time work and further education at another educational institution.

Apprenticeship staff from the U.S. Department of Labor (DOL) worked closely with the NHCTC team to develop and pilot the apprenticeship program. Now a group of community colleges from the Northeast and Mid-Atlantic States and DOL staff are in the process of expanding the apprenticeship model to additional employers.



## EARLY TRENDS

# Registered Apprenticeship: A Pathway to a Stronger Workforce

### Registered Apprenticeship Is a Valid Training Model for High-Growth Industries

DOL's effort to initiate Registered Apprenticeship in the six industries has demonstrated the value of the Registered Apprenticeship model in meeting employer demands in high-growth industries. The training model, which teaches workers the practical and theoretical aspects of a skilled occupation, is a valid approach for expanding in new directions. The model encompasses competency-based skill attainment in almost all of the industries considered. Rather than base competency on passing a written test or time in training, advancement in the new apprenticeships are based on ability to master a skill. The early data points to the promise of the competency-based Registered Apprenticeship model as a flexible means to help employers in newer and growing industries prepare skilled workers to do their jobs.

Although the industries in this report are just beginning



to integrate the Registered Apprenticeship model into their training strategies, the following are some of the early results showing that the model meets a number of workforce needs in diverse industries.

### Recruitment and Retention A Top Priority for Employers

Employers across the six industries generally indicated that recruitment and retention are the main workforce challenges that their industries face. And for many industries, such as health care, these challenges come at a high cost. Implementation of apprenticeship programs has helped employers in these industries retain employees and save money. Investing in improving worker skills is less costly than recruitment. Apprentices appreciate the willingness of employers to invest in them by paying for training, providing incremental wage increases as skills improve, and offering opportunities for them to advance to higher positions.

Additionally, employers cited reduction in employee turnover rates due to the apprenticeship programs. Reduced turnover means that employers experience cost savings; they do not have to constantly recruit and train new employees. Human resources personnel said they anticipate that the use of skill standards,

such as credentials from the National Institute for Metalworking Skills (NIMS), will help streamline the recruitment process. Hiring the right employee for the right job saves money and ensures recruitment is cost effective.

The Indiana National Guard, for example, not only uses apprenticeship as a recruitment tool, but also as a method to help full-time members receive college credit toward a degree. The Guard is using apprenticeship as a means to transition unemployed and under-employed Guard members back to civilian life after serving on active duty and help keep them in local Guard units. This is critical, considering that the Guard is facing difficulties recruiting and retaining members.

### Skills Development Essential to Building Competence

Having skilled workers requires employer access to a flexible training system that helps them continually update worker skills and maintain a competitive edge. The lack of skilled workers is a major challenge and cuts across most of the industries discussed in this report.

As Registered Apprenticeship gains acceptance in new industries, it is rapidly becoming a training system based upon competency development, rather than solely time spent

in a job. Each industry develops skill sets that are needed to perform jobs. Using this model, apprentices must show their mastery of tasks to move on to the next level. This approach is proving highly effective.

- In the health care industry, Certified Nursing Assistants (CNA) are being trained through the Registered Apprenticeship model with high-level, competency-based specialties. The CNA is a practical entry point for individuals who never thought they could enter the health care field. It gives them a path to become a Registered Nurse, a Radiology Technician, or another clinical occupation.

- Apprenticeship training is helping employees quickly update and learn new skills in the information technology industry. Studies by the Navy show that IT specialists reached competency faster using the apprenticeship approach. NITAS, the web-based apprenticeship tracking system, makes it easier for apprentices and journey-workers to share their credentials with prospective employers. Employers who are NITAS members can access information, such as transcripts, certifications, and skill levels to verify that potential employees meet their needs and are qualified to hold specific jobs.



- The advanced manufacturing industry is developing a series of competency-based curriculum guides and credentials to ensure that workers are better trained and meet the demands of employers.
- The Seafarer's International Union is replacing its informal apprenticeship with Registered Apprenticeship to ensure that workers meet U.S. Coast Guard training requirements, such as those involving safety issues, and training cruise ship hospitality workers.

### **Productivity** Enhanced by a Skilled and Competent Workforce

The projects reported here are in early stages of implementation. Several employers have reported improved productivity resulting from higher effectiveness and efficiency. Studies produced by the Navy, for

example, show that IT specialists reach competency faster using the apprenticeship approach, which combines classroom instruction and structured on-the-job experience, than through a more traditional approach that provides classroom instruction only. These performance indicators will be closely tracked as the programs mature.

### **Improvement in Quality of Care**

The apprenticeship model is a strategy to help health care providers deliver the best

possible care to patients and residents. Employees are given better training, which directly affects patient care. Additionally, employers are making investments in apprentices by paying increased wages as their skills improve and, thus, providing concrete pathways to advance in their careers. All of these elements contribute to better employees who provide better care to patients.

### **Improvements in Products/Services**

After the first year of implementing the Registered Apprenticeship program, product improvements have been reported in the high-tech manufacturing program with the lowest number of product defects and lowest number of returns, and the best on-time delivery. Likewise, customer satisfaction is expected to increase.

### **Outreach and Education** A Key to Raising Awareness and Facilitating Expansion

The success of the Registered Apprenticeship training model depends upon the ability of programs to build partnerships among their various stakeholders, especially employers, educational organizations, and the workforce development system. Registered Apprenticeship is a new training model for most high-growth industries and educating partners about its structure and benefits, as well as the role they play in implementing the program, is critical. Involving all partners in the design, development, and implementation of an apprenticeship program ensures their needs are addressed.



Partnerships between employers and educational institutions benefit both; employers need the support of local colleges or technical institutions to provide the related instruction, while colleges benefit from having skill standards as guides for instruction and students who are committed to learning.

## **Capacity Building** Depends on Collaboration Among Apprenticeship Partners

Health care employers reported that local educational and training organizations design related instruction to meet the educational needs of apprentices. The Houston Community College, for example, offers a weekend Certified Nursing Assistant program that accommodates work schedules of apprentices at a community health care center. Articulation agreements between the Indiana National Guard and several universities and colleges provide college credit for military training, depending upon the nature and length of the military schooling that a service member receives.

In developing Registered Apprenticeship programs, employers often face the challenge of having too few qualified trainers and mentors. Community college representatives reported



that there are too few qualified faculty members. This is particularly true in health care, where worker or skill shortages are acute, and in geospatial technology, where occupational competencies are not yet clearly defined and are still emerging. This points to the need for increased collaboration among community colleges, four-year institutions, employers and the workforce development system.

## **Workforce Diversity** Necessary to Mirror the Local Community

The Registered Apprenticeship model as applied in these industries is helping to increase workplace diversity, providing opportunities to workers that traditionally have not participated in apprenticeships. Employers from advanced manufacturing, health care, and the military have made strong efforts to ensure diverse groups are participating in their apprenticeship programs to better mirror local communities. Health care, in particular, has emphasized the need for greater minority participation in its workforce to match the patient population. This ensures better communication with patients, which in turn provides better health care.

Nontraditional students, those who do not follow a formal academic training path, have been targeted in these projects. Several employers said that students

often perform better using the apprenticeship model because it allows them to move at their own pace. It also allows them to directly apply what they learn in their jobs, which helps them become more competent at a faster pace. This appears to be the case for both incumbent workers as well as dislocated workers. The Indiana National Guard, for example, uses the apprenticeship model to train Guard members returning from active duty.

## **Leadership and Sustainability** Vital to Advancing Apprenticeship

The OA national and local staff demonstrated strong vision and direction as they promoted Registered Apprenticeship as a valuable training model. Local OA and SAC staff members played major roles in helping establish programs in the seven industries. Interviews with employers and the workforce system indicate that apprenticeship staff played a key role in recruiting employers, forming partnerships, and providing technical support throughout program implementation.

## **Next Steps**

In addition to the seven industries considered in this report, OA is pressing ahead with developing Registered Apprenticeship in several other high-growth industries. The industries include automotive, retail trade, hospitality, financial services, and energy. The early trends from the seven industries will facilitate the development of these new ventures.

## For More Information

Office of Apprenticeship  
Employment and Training Administration  
U.S. Department of Labor

[www.doleta.gov/oa](http://www.doleta.gov/oa)

1.877.872.5627

Health Care  
[www.cael.org](http://www.cael.org)

Advanced Manufacturing  
[www.nims-skills.org](http://www.nims-skills.org)

Information Technology  
[www.comptia.org](http://www.comptia.org) and [www.nitas.us](http://www.nitas.us)

Maritime  
[www.seafarers.org](http://www.seafarers.org)

Military - National Guard  
[www.inarng.org](http://www.inarng.org)

Geospatial Technology  
[www.geowdc.com](http://www.geowdc.com)

Biotechnology  
[www.biomanufacturing.org](http://www.biomanufacturing.org), <http://biotech.nhctc.edu>, and  
<http://www.bio-link.org>



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